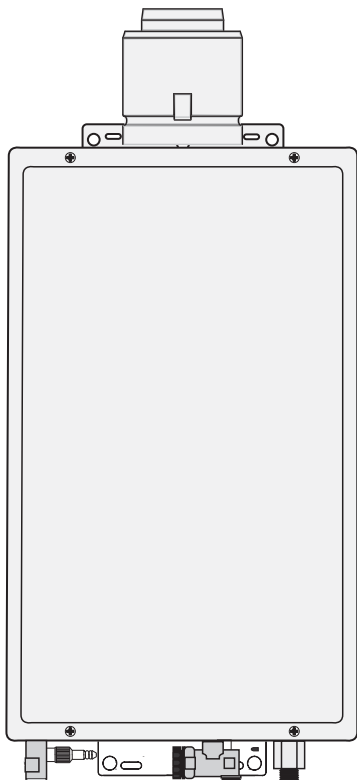


Use & Care Manual

With Installation Instructions for the Installer

Direct Vent Gas

Tankless Water Heater



⚠ Warning: This water heater is not suitable for use in manufactured (mobile) homes!

The purpose of this manual is twofold: one, to provide the installer with the basic directions and recommendations for the proper installation and adjustment of the water heater; and two, to the owner-operator, to explain the features, operation, safety precautions, maintenance and troubleshooting of the water heater. This manual also includes a parts list.

It is very important that all persons who are expected to install, operate or adjust this water heater read the instructions carefully so they may understand how to perform these operations. If you don't understand these instructions or any terms within it, seek professional advice.

Any questions regarding the operation, maintenance, service or warranty of this water heater should be directed to the seller from whom it was purchased. If additional information is required, refer to the section on If You Need Service.

Do not destroy this manual. Please read carefully and keep in a safe place for future reference.

⚠ Recognize this symbol as an indication of Important Safety Information!

⚠ California Proposition 65 Warning: This product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

⚠ WARNING: If the information in these instructions is not followed exactly, a fire or explosion may result, causing property damage, personal injury or death.

⚠ FOR YOUR SAFETY!

— Do not store or use gasoline or other flammable vapors or liquids or other combustible materials in the vicinity of this or any other appliance. To do so may result in an explosion or fire.

— WHAT TO DO IF YOU SMELL GAS

- Do not try to light any appliance.
- Do not touch any electrical switch; do not use any phone in your building.
- Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.

- If you cannot reach your gas supplier, call the fire department.
 - Do not return to your home until authorized by the gas supplier or fire department.
- Improper installation, adjustment, alteration, service or maintenance can cause property damage, personal injury or death. Refer to this manual. Installation and service must be performed by a qualified installer, service agency or the gas supplier.



Safety Information

Safety Precautions 3-6
LP Gas Models 5

Installation Instructions

Location, Outdoor 7
Location, Indoor 8, 9
Venting 10-15
Water Connections 16-18
Gas Supply 19
High Altitude 19
Remote Control 20, 21
Electrical Connection 22
Typical Installation 23
Pipe Insulation 24
Installation Checklist 25

Operating Instructions

Lighting Instructions 26
Water Temperature 27, 28

Care and Cleaning

Maintenance 29
Housekeeping 29, 30
Vent Inspection 30
Burner Inspection 30
Extended Shut-Down 30
Draining 31
Freeze Protection 31

Troubleshooting Tips

Before You Call
For Service 32, 33

Customer Service

Parts List 34
If You Need Service 36

Qualified Installers Only!

Dip Switch Adjustment 35



FOR YOUR RECORDS

Write the model and serial numbers here:

You can find them on a label on the appliance.

Staple sales slip or cancelled check here.

Proof of the original purchase date is needed to obtain service under the warranty.



READ THIS MANUAL

Inside you will find many helpful hints on how to use and maintain your water heater properly. A little preventive care on your part can save you time and money over the life of your water heater.

You'll find many answers to common problems in the Troubleshooting Guide. If you review the chart of Troubleshooting Tips first, you may not need to call for service.



READ THE SAFETY INFORMATION

Your safety and the safety of others are very important. There are many important safety messages in this manual and on your appliance. Always read and obey all safety messages.



This is the safety alert symbol. Recognize this symbol as an indication of Important Safety Information! This symbol alerts you to potential hazards that can kill or hurt you and others.

All safety messages will follow the safety alert symbol and either the word "DANGER", "WARNING", "CAUTION" or "NOTICE".

These words mean:

▲ DANGER

An imminently hazardous situation that will result in death or serious injury.

▲ WARNING

A potentially hazardous situation that could result in death or serious injury and/or damage to property.

▲ CAUTION

A potentially hazardous situation that may result in minor or moderate injury.

Notice:

Attention is called to observe a specified procedure or maintain a specific condition.

IMPORTANT SAFETY INFORMATION. READ ALL INSTRUCTIONS BEFORE USING.

Be sure to read and understand the entire Use and Care Manual before attempting to install or operate this water heater. It may save you time and money. Pay particular attention to the Safety Instructions. Failure to follow these warnings could result in serious bodily injury or death. Should you have problems understanding the instructions in this manual, or have any questions, STOP, and get help from a qualified service technician, or the local gas utility.

! DANGER!



INSTALL AND PROPERLY VENT THE WATER HEATER...

Failure to install and properly vent the water heater to the outdoors as outlined in the Venting Section of the Installation Instructions in this manual can result in unsafe operation of the water heater. To avoid the risk of fire, explosion or asphyxiation from carbon monoxide, never operate this water heater unless it is properly vented and has an adequate air supply for proper operation.

Be sure to inspect the vent terminal, the air intake, and the coaxial vent system on the water heater for proper installation at initial start-up; and at least annually thereafter. Refer to the Care and Cleaning section of this manual for more information regarding coaxial vent system inspection.

! WARNING!



Gasoline, as well as other flammable materials and liquids (adhesives, solvents, paint thinners etc.), and the vapors they produce are extremely dangerous. DO NOT handle, use or store gasoline or other flammable or combustible materials anywhere near or in the vicinity of a water heater or any other appliance. Be sure to read and follow the labels on the water heater, as well as the warnings printed in this manual. Failure to do so can result in property damage, bodily injury or death.

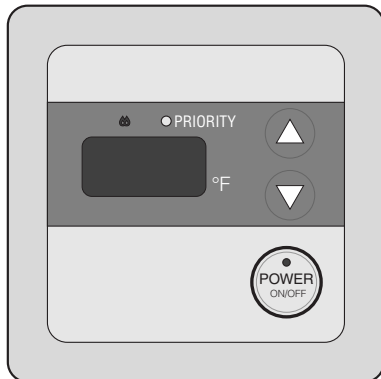
! DANGER	
<p>! Vapors from flammable liquids will explode and catch fire causing death or severe burns.</p> <p>Do not use or store flammable products such as gasoline, solvents or adhesives in the same room or area near the water heater.</p> <p>Keep flammable products:</p> <ol style="list-style-type: none"> 1. far away from heater, 2. in approved containers, 3. tightly closed and 4. out of children's reach. 	<p>Water heater has a main burner flame.</p> <p>The main burner flame:</p> <ol style="list-style-type: none"> 1. which can come on at any time and 2. will ignite flammable vapors. <p>Vapors:</p> <ol style="list-style-type: none"> 1. cannot be seen, 2. are heavier than air, 3. go a long way on the floor and 4. can be carried from other rooms to the main burner flame by air currents.
<p>Installation:</p> <p>Do not install water heater where flammable products will be stored or used unless the main burner flame is at least</p>	
<p>18" above the floor. This will reduce, but not eliminate, the risk of vapors being ignited by the main burner flame.</p>	
<p>Read and follow water heater warnings and instructions. If owners manual is missing, contact the retailer or manufacturer.</p>	

Children, disabled and elderly are at highest risk of being scalded.

See instruction manual before setting temperature at water heater.

Feel water before bathing or showering.

Temperature limiting valves are available, see manual.



To find water temperature being delivered, turn on a hot water faucet and place a thermometer in the water stream and read the thermometer. (See page 27 & 28 for more details.)

The temperature of the water at the outlet of the water heater can be regulated by setting the temperature on Remote Control. The remote control was set at 100°F (38°C) before it was shipped from the factory.

The diagram to the bottom left illustrates the Remote Control and how to adjust the water temperature.

Notice: The factory setting allows operating temperatures between 100°F (38°C) and 120°F (49°C). Temperatures of up to 140°F (60°C) can be achieved with the MAIN (UMC-117) remote control and a dip switch adjustment. Only qualified service personnel should perform this adjustment. Only factory authorized remote control(s) should be used.

Notice: When this water heater is supplying general purpose hot water requirements for use by individuals, a thermostatically controlled mixing valve for reducing point of use water temperature is recommended to reduce the risk of scald injury. Contact a licensed plumber or the local plumbing authority for further information.



! DANGER!

NATURAL GAS AND LIQUEFIED PETROLEUM MODELS

Both LP and natural gas have an odorant added to aid in detecting a gas leak. Some people may not physically be able to smell or recognize this odorant. If you are unsure or unfamiliar with the smell of LP or natural gas, ask the gas supplier. Other conditions, such as “odorant fade”, which causes the odorant to diminish in intensity, can also hide or camouflage a gas leak.

- Water heaters utilizing LP gas are different from natural gas models. A natural gas water heater will not function safely on LP gas and vice versa.
- No attempt should ever be made to convert the water heater from natural gas to LP gas. To avoid possible equipment damage, personal injury or fire, do not connect the water heater to a fuel type not in accordance with the unit data plate; propane for propane units and natural gas for natural gas units. These units are not certified for any other fuel type.
- LP appliances should not be installed below grade (for example, in a basement) if such installation is prohibited by federal, state and/or local laws, rules, regulations or customs.
- Propane or LP gas must be used with great caution. It is heavier than air and will collect first in lower areas, making it hard to detect at nose level.
- Before attempting to light the water heater, make sure to look and smell for gas leaks. Use a soapy solution to check all gas fittings and connections. Bubbling at a connection indicates a leak that must be corrected. When smelling to detect a gas leak, be sure to sniff near the floor also.
- Gas detectors are recommended in LP and natural gas applications and their installation should be in accordance with the detector manufacturer’s recommendations and/or local laws, rules, regulations or customs.
- It is recommended that more than one method, such as soapy solution, gas detectors, etc., be used to detect leaks in gas applications.

Notice: If a gas leak is present or suspected:

- ***Do not*** attempt to find the cause yourself.
- ***Do not*** try to light any appliance.
- ***Do not*** touch any electrical switch.
- ***Do not*** use any phone in your building.
- Leave the building immediately and make sure your family and pets leave also.
- Leave the doors open for ventilation and contact the gas supplier, a qualified service agency or the fire department.
- Stay away from the building until the service call has been made, the leak is corrected and a qualified agency has determined the area to be safe.

IMPORTANT SAFETY INFORMATION

READ ALL INSTRUCTIONS BEFORE USING.

WARNING!

For your safety, the information in this manual must be followed to minimize the risk of fire or explosion, electric shock, or to prevent property damage, personal injury or loss of life.



FOR INSTALLATIONS IN THE STATE OF CALIFORNIA

California Law requires that water heaters must be braced, anchored or strapped to resist falling or horizontal displacement due to earthquake motions. For water heaters up to 52 gallon capacity, a brochure with generic earthquake bracing instructions can be obtained from: Office of the State Architect, 1102 Q Street, Suite 5100, Sacramento, CA 95814 or you may call 916-445-8100 or ask a water heater dealer.

However, applicable local codes shall govern installation. For residential water heaters of a capacity greater than 52 gallons or tankless-style, consult the local building jurisdiction code for acceptable bracing procedures.



SAFETY PRECAUTIONS

Have the installer show you the location of the gas shut-off valve and how to shut it off if necessary. Turn off the manual shut-off valve if the water heater has been subjected to overheating, fire, flood, physical damage or if the gas supply fails to shut off.

- Read this manual entirely before installing or operating the water heater.
- Use this appliance only for its intended purpose as described in this Use and Care Manual.
- Be sure your appliance is properly installed in accordance with local codes and the provided installation instructions.
- Do not attempt to repair or replace any part of your water heater unless it is specifically recommended in this manual. All other servicing should be referred to a qualified technician.



READ AND FOLLOW THIS SAFETY INFORMATION CAREFULLY.

SAVE THESE INSTRUCTIONS

Installing the water heater :

This water heater must be installed in accordance with these instructions, local codes, utility company requirements and/or in the absence of local codes, use the latest edition of the American National Standard/National Fuel Gas Code. A copy can be purchased from either the American Gas Association, 400 North Capitol Street Northwest, Washington, DC 20001 as ANSI standard Z223.1 or National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02269 as NFPA 54. In Canada, the latest edition of the CSA B149.1 Natural Gas and Propane Installation, and the Canadian Electrical Code, CSA C22.1 Part 1, in the absence of local codes.

Location of Water Heater

The water heater should not be located in an area where leakage of the heat exchanger or connections will result in damage to the area adjacent to it or to lower floors of the structure.

When such areas cannot be avoided, it is recommended that a suitable catch pan, adequately drained, must be installed under the water heater.

The pan must not restrict combustion air flow.

A gas fired water heater or any other appliance should not be installed in a space where liquids which give off flammable vapors are to be used or stored. Such liquids include gasoline, LP gas (butane or propane), paint or adhesives and their thinners, solvents or removers.

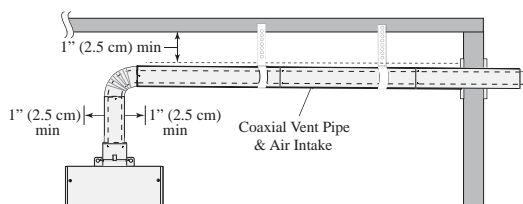
Because of natural air movement in a room or other enclosed space, flammable vapors can be carried some distance from where their liquids are being used or stored. The open flame of the water heater's main burner can ignite these vapors causing an explosion or fire which may result in severe burns, death or property damage.

The water heater must be located so it is not subject to physical damage, for example, by moving vehicles, area flooding, etc.

If the water heater is installed in a garage, it should be installed so that the direct ignition system and main burner are no less than 18 inches (45 cm) above the garage floor.

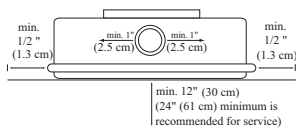
Raising the gas fired water heater will reduce BUT NOT eliminate the possibility of lighting the vapor of any flammable liquids which may be improperly stored or accidentally spilled.

The water heater should be installed as close as practical to the vent termination to minimize vent length and the number of elbows required for venting.



⚠ WARNING:
Combustible construction refers to adjacent walls and ceilings and should not be confused with combustible or flammable products and materials. Combustible and/or flammable products and materials should never be stored in the vicinity of this or any gas appliance.

Minimum Clearance from Combustible and Non-Combustible Construction.



Top = 12" (30 cm)	Bottom = 12"
Front = 12" (30 cm)	Back = 0"*
Side = 1/2"	CoAxial Vent = 1"
* (with support bracket)	

⚠ WARNING: Follow vent manufacturer's instruction while installing vent. If required, provide additional clearances from vent to combustibles per vent manufacturer's instruction.

- The water heater **should** be installed with the proper venting materials and termination suitable for **Category III** venting.
- A fire stop plate should be installed at every penetration of a floor or ceiling if the vent is not running in a fire rated shaft.
- Failure to install and properly vent the water heater to the outdoors as outlined in the Venting Section of this manual can result in unsafe operation.
- Long hot water lines should be insulated to conserve water and energy.
- The water heater and water lines should be protected from exposure to freezing temperatures.
- **Do not** install the water heater in bathrooms, bedrooms, any occupied rooms normally kept closed, or in outdoor areas.
- **Do not** install the water heater in small, poorly ventilated rooms, or in airtight rooms with air conditioning.
- **Do not** install water heater where subject to vibrations.
- **Do not** install the water heater in Recreational Vehicles, Mobile Homes, Boats and other Watercrafts.
- **Do not** install the water heater near vents for heating or cooling. A minimum of 4 feet (1.2 m) should be maintained.
- Minimum clearance from combustible and non-combustible construction is 1/2" (1.3 cm) sides, 0" rear (with support bracket); 12" (30 cm) from the bottom; 12" (30 cm) from the front of the water heater; and 12" (30 cm) from the top (24" [61 cm] from front and top is recommended for servicing purposes).
- Maintain a minimum clearance of 1" (2.5 cm) around the coaxial vent pipe to combustible or non-combustible construction, unless otherwise specified by vent manufacturer or installed in an enclosed space. If the clearances stated on the Instruction/Warning Label, located on the front panel of the heater differ, install the water heater according to the clearances stated on the label.



Remote Control
Assembly Kit



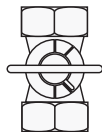
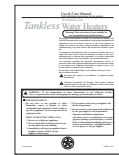
Wood Screw x 5pcs.



Washer x 4 pcs.



Use & Care Manual



Manual Appliance
Gas Shut-off Valve

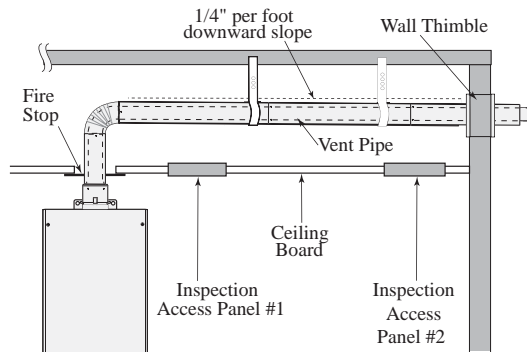


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Installing the water heater:

Venting Through Closed Spaces

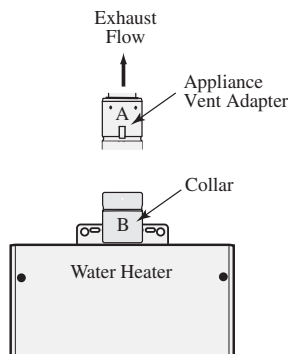


If the coaxial vent piping passes through a closed space, a minimum clearance of 1" (2.5 cm) when installed horizontally or 6" (15 cm) when installed vertically should be maintained between the coaxial vent pipe and combustibles and noncombustibles. Be sure to follow local codes and vent manufacturer's installation instructions.

For maintenance and inspection purposes, the following access panels are required.

- Two (2) inspection access panels large enough to allow access for venting inspection. One (1) of these access panels should be close to where the coaxial vent pipe enters the ceiling. The other access panel should be near the vent termination.
- A ventilation access panel with a 16 in² (103 cm²) opening should be provided every 10 ft (3 m).

CAUTION: Ensure that the appliance vent adapter is securely attached to the water heater collar.



Appliance Vent Adapter

The water heater must be installed with a UL 1738 approved Category III Stainless Steel appliance coaxial vent adapter.

Read the following instructions before installation.

- Test fit the adapter over the water heater collar before proceeding.

- Slide adapter end "A" down over heater collar "B" as far as it will go.
- Use the screws provided with the vent adapter to attach the adaptor to the heater collar.

NOTICE: Follow the appliance coaxial vent adapter manufacturer's instructions.

▲ CAUTION: Condensate is known to be acidic; refer to local, state (provincial) or federal codes for proper handling and discharge methods.

▲ CAUTION: Condensate must drain away from the water heater and should not be allowed to drain back into any part of the vent system.

▲ WARNING: Failure to provide a vent condensate drain close to the appliance could allow acidic flue gas condensate to enter into appliance flueways, causing premature failure of the appliance.

Draining the Condensate

Provision should be made to collect and dispose of condensate from venting systems.

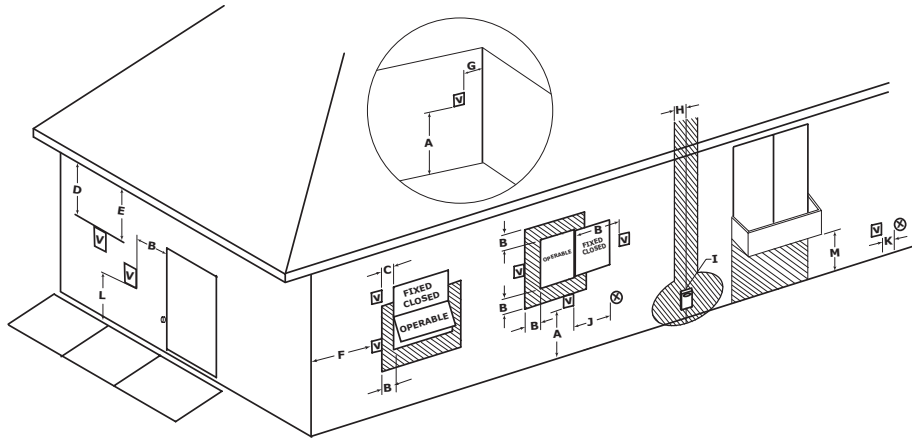
When a water heater is **vented horizontally**, the vent pipe can have a DOWNWARD or UPWARD slope towards the termination. If an UPWARD slope is used, a condensate trap must be installed as close as practical to the water heater in order to prevent condensate from draining back into the water heater. See Examples A and B on page 14 for DOWNWARD and UPWARD slope for horizontally vented water heaters.

When a water heater is **vented vertically**, an UPWARD slope must always be used. A condensate trap must be installed in the horizontal section of the vent and as close as practical to the water heater in order to prevent condensate from draining back into the water heater. See the diagram on page 15 showing UPWARD slope for vertically vented water heaters.

Always attach a drain hose to the drain fitting and plumb the hose to a sanitary sewer drain.

A high temperature silicon tubing suitable for use with acidic condensate and appropriate for the temperature range should be used.

The drain tube is fashioned into a "pigtail" trap and must be filled with water to prevent flue gases from emitting into the building prior to operating the appliance.



✓ VENT TERMINAL
 X AIR SUPPLY INLET
 ▨ AREA WHERE TERMINAL IS NOT PERMITTED

Horizontal Vent Terminal Location

The following information should be used for determining the proper location of the vent terminal for direct vent tankless water heaters.

	Canadian Installations ¹	US Installations ²
A= Clearance above grade, veranda, porch, deck or balcony.	12 inches (30 cm) above anticipated snow level.	12 inches (30 cm) above anticipated snow level.
B= Clearance to window or door that may be opened.	6 inches (15 cm) for appliances ≤ 10,000 Btuh (3 kW), 12 inches (30 cm) for appliances > 10,000 Btuh (3kW) and ≤ 100,000 Btuh (30kW), 36 inches (91 cm) for appliances > 100,000 Btuh (30kW).	6 inches (15 cm) for appliances ≤ 10,000 Btuh (3 kW), 9 inches (23 cm) for appliances > 10,000 Btuh (3kW) and ≤ 50,000 Btuh (15kW), 12 inches (30 cm) for appliances > 50,000 Btuh (15kW).
C= Clearance to permanently closed window.	*	*
D= Vertical Clearance to ventilated soffit located above the terminal within a horizontal distance of 2 feet (61 cm) from the center line of the terminal.	*	*
E= Clearance to unventilated soffit.	*	*
F= Clearance to outside corner.	*	*
G= Clearance to corner.	*	*
H = Clearance to each side of center line extended meter/regulator assembly. above	3 feet (91 cm) within a height 15 feet (4.57 m) above the meter/regulator assembly.	*
I = Clearance to service regulator coaxial vent outlet.	3 feet (91 cm)	*
J = Clearance to nonmechanical air supply inlet to the combustion air inlet to any building or other appliance.	6 inches (15 cm) for appliances ≤ 10,000 Btuh (3 kW), 12 inches (30 cm) for appliances > 10,000 Btuh (3kW) and ≤ 100,000 Btuh (30kW), 36 inches (91 cm) for appliances > 100,000 Btuh (30kW).	6 inches (15 cm) for appliances ≤ 10,000 Btuh (3 kW), 9 inches (23 cm) for appliances > 10,000 Btuh (3kW) and ≤ 50,000 Btuh (15kW), 12 inches (30 cm) for appliances > 50,000 Btuh (15kW).
K = Clearance to mechanical air supply inlet.	6 feet (1.83 m)	3 feet (91 cm) above if within 10 feet (3 m) horizontally.
L = Clearance above paved sidewalk or paved driveway located on public property.	Not Allowed	Not Allowed
M = Clearance under veranda, porch, deck or balcony.	Not Allowed	Not Allowed

¹ In accordance with current CAN/CGA-B149 Installation Codes.

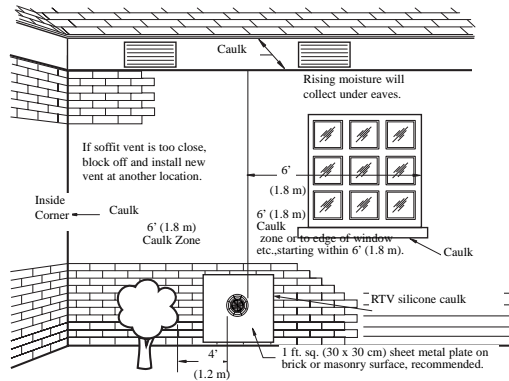
² In accordance with current ANSI Z223.1/ NFPA 54 National Fuel Gas Code.

* If clearances are not specified, then follow local installation codes and the requirement of the gas supplier.

** For condensing appliances: The vent for this appliance shall not terminate over public walkways, near soffit vents, crawl space vents, or other areas where condensate or vapor could create a nuisance, hazard or cause property damage, or where condensate or vapor could cause damage or could be detrimental to the operation of regulators, relief valves or other equipment.

Installing the water heater:

Indoor Water Heater

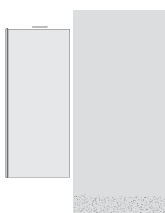


⚠ WARNING: Moisture in the flue gas will condense as it leaves the vent terminal. In cold weather this condensate can freeze on the exterior wall, under the eaves and on surrounding objects. Some discoloration to the exterior of the building is to be expected. However, improper location or installation can result in severe damage to the structure or exterior finish of the building

Additional Considerations

- 1 Do NOT install vent terminal under any patio or deck.
- 2 To help prevent moisture from freezing on walls and under eaves, do not locate vent terminal on the side of a building with prevailing winter winds.
- 3 To help prevent water lines from freezing, do not locate vent terminal on the side of a building with prevailing winter winds.
- 4 Do NOT locate vent terminal too close to shrubbery, as flue gases may damage them.
- 5 Caulk all cracks, seams and joints within six (6) feet (1.8 m) of vent terminal.
- 6 Caulk around thimble face plate for weather tight seal.
- 7 All painted surfaces should be primed to lessen the chance of physical damage. Painted surfaces will require maintenance.
- 8 Do NOT extend exposed vent pipe of indoor water heaters outside of building.
- 9 Guard vent against accidental contact with people and pets.

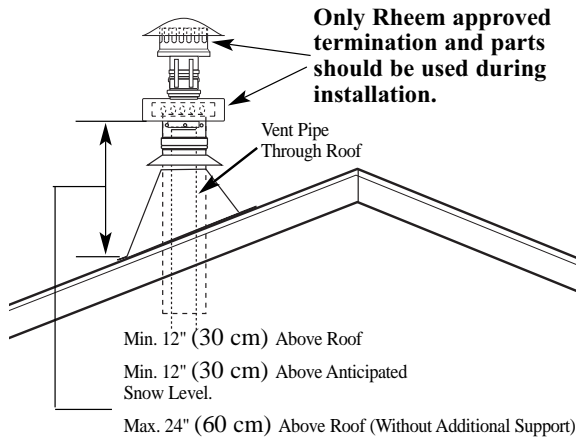
Installing the water heater:



**Example A: Typical Horizontal Termination
w/ 1/4" per foot DOWNWARD Slope**

Installing the water heater:

Vertical Vent Termination Location



The location of the vent terminal depends on the following minimum clearances and considerations (see diagram at left):

- 1 Minimum twelve (12) inches (30 cm) above roof.
- 2 Minimum twelve (12) inches (30 cm) above anticipated snow level.
- 3 Maximum twenty-four (24) inches (60 cm) above roof level without additional support for vent.
- 4 Four (4) feet (1.2 m) from any gable, dormer or other roof structure with building interior access (i.e., vent, window, etc.).
- 5 Ten (10) feet (3 m) from any forced air inlet to the building. Any fresh or make-up air inlet such as a dryer or furnace area is considered to be a forced air inlet.

Vertical Vent Installation

Notice: Only Rheem approved termination and parts should be used during installation.

Notice: Follow vent manufacturer's installation instructions and their recommended clearances to combustibles as required.

A fire stop plate should be installed at every penetration of a floor or ceiling if the vent is not running in a fire-rated shaft. Maintain the recommended air space clearance to combustible materials and building insulation.

Once the vent terminal location has been determined, make a hole through the roof and interior ceiling to accommodate the vent pipe. Complete the vent pipe installation to the water heater's vent connector fitting on the

water heater vent collar outlet. Support vertical or horizontal runs as previously mentioned. If required, use silicone sealant at the point the vent connector joins the water heater.

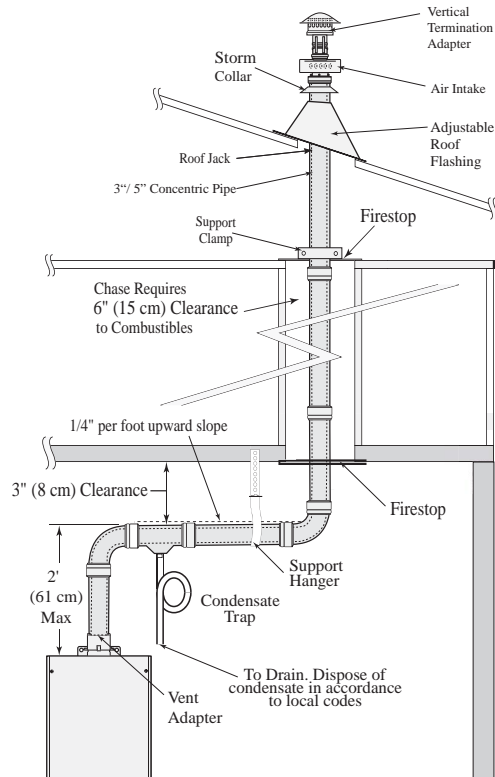
Install adequate flashing where the vent pipe passes through the roof. Determine the vent terminal height and install the vent pipe accordingly. Refer to the diagram above for proper vent terminal height.

The vent roof system must terminate at least 1 foot (30 cm) above the roof line and at least 2 feet (61 cm) higher than any portion of the building within 10 feet (3 m).

Install supports every 5 feet (1.5 m) vertically along the vent pipe route. Vertical supports are required after every transition to vertical and are required after every offset elbow.

When the vent is free-standing and penetrates a roof/ceiling, another means of support must be used at a second location.

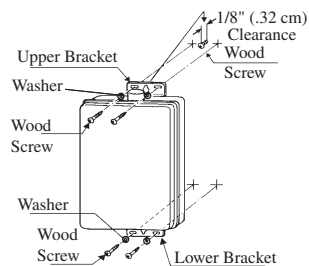
Follow the vent manufacturer's recommended installation instructions provided with the vent purchased from the manufacturer.



Standard Vertical Vent Termination

Mounting the Water Heater

⚠ CAUTION:
Reinforcement of the wall is required in case the wall is not strong enough to hold the appliance.



The image above may differ in appearance from your water heater.

Make sure the location of the appliance allows for easy access and operation.

Wall studs should be utilized when mounting the water heater to the wall. Alternately, a suitable piece of wood may be placed inside or outside of the wall to span the distance between the wall studs. Fasten the water heater mounting brackets to the wood.

In case of dry wall or concrete wall, use drywall anchors or lag bolts.

The water heater requires 120VAC/60Hz. Have a receptacle with ground terminal near the water heater. The length of the power supply cord is 10 feet (3 m).

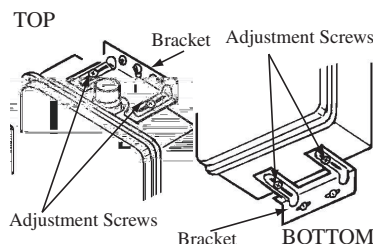
Install a wood screw for the upper bracket with a clearance of 1/8" (.32 cm) between the wall and the screw head. Hang the center of the upper bracket on the screw.

Using a wood screw and a washer, affix the

lower bracket to the wall (Left and Right). Repeat to affix the top bracket.

The brackets can be adjusted to change the distance between the back of the appliance and the wall within the range of 3/8" (.95 cm) to 1-1/2" (3.8 cm).

Loosen the adjustment screws of both the top and the bottom brackets to adjust the distance (See diagram below).



The image above may differ in appearance from your water heater.

Thermal Expansion

A thermal expansion tank will be required if the water heater is installed in a closed loop system to prevent damage to heater, related piping and relief valve. Replacing the relief valve will not correct the problem! The expansion tank is designed with an air cushion built in that compresses as the system pressure increases, thereby relieving the over pressure

condition and eliminating the repeated operation of the relief valve. Other methods of controlling thermal expansion are also available. Contact your installing contractor, water supplier or plumbing inspector for additional information regarding this subject.

IMPORTANT: Do not apply heat to the HOT or COLD water connections. If sweat connections are used, sweat tubing to adapter before fitting adapter to the water connections on heater. Any heat applied to the water supply fittings will permanently damage the internal components of the water heater.

Water Supply Connections

Plumbing should be carried out by a qualified plumber in accordance with local codes.

Use approved plumbing materials only.

The diameter of the pipe lines should be a minimum of 3/4".

To conserve energy and to prevent freezing, insulate both cold and hot water supply lines. DO NOT cover the drain or pressure relief valve.

To ensure proper operation of the water heater, the following water pressure guidelines should be followed:

- Operation of the water heater requires the minimum water pressure of 14 psi (97 kPa) and a minimum water flow rate of 0.66 gpm (2.5 lpm).
- A water pressure of 40 psi (276 kPa) is required to achieve maximum flow rate.
- To maintain proper performance, ensure sufficient water supply pressure. The

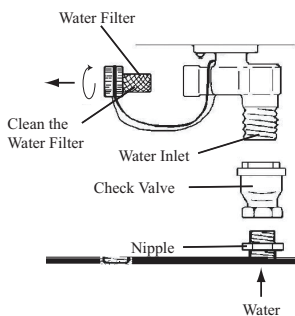
Required Water Pressure = Min. Operating Water Pressure (14 psi [97 kPa]) + Pipe Pressure Loss + Faucet and Shower Pressure Loss + Safety Margin (more than 5 psi [34 kPa]).

- To supply hot water to upper floors, additional water pressure (0.44 psi/ft [10 kPa/m]) must be ensured. The measurement should be calculated by the distance between the water inlet of the water heater (ground level) to the hot water faucet (upper floor level).
- Well water systems should be set to ensure a minimum system pressure of 40 psi (276 kPa). The pressure should remain stable during the operation of the water heater.
- When the water is supplied from a water supply tank, the height of the tank and the diameter of the pipes and their relation to water pressure should be taken into consideration. **Gravity water pressure is not recommended.**

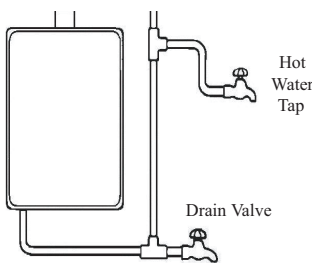
Installing the water heater:

▲ CAUTION: This water heater must only be used with the following water supply system conditions:

- With clean, potable water free of corrosive chemicals, sand, dirt or other contaminants.
- With inlet water temperatures above 32°F (0°C), but not exceeding 120°F (49°C).
- Free of lime and scale deposits.
- DO NOT reverse the hot and cold water connections. The water heater will not operate.



Notice: Use only teflon tape on cold and hot water connections and lines.



This appliance is not intended for space heating application. Do not connect this heater to waterlines previously used for space heating or non-potable water distribution. All water piping and components shall be suitable for potable water.

Water Supply Connections, continued

Notice: If the water flow resistance of a shower head is too high, the burner in the water heater will fail to ignite. Keep the shower head clean from debris that could cause additional pressure drop.

Notice: If using mixing valves on the outlet, choose one that prevents cold water pressure from overcoming hot water line pressure.

Notice: If multiple water heaters are installed in a manifold system, the water piping must be in "Parallel". A water pressure of 40 psi (276 kPa) is recommended for each water heater for proper operation of the water heaters.

Alternate Water Piping Arrangement with Optional Valve Kit

Valve kits may be purchased and installed as optional items. Contact your distributor or place of purchase for details. They allow for one person full diagnostic testing and ease of flushing the system. The kit includes two full port isolation valves, one for the cold side and one for the hot side. Refer to page 22.

Install a shutoff valve near the inlet of the water heater for service and draining purposes.

It is not recommended to use pipes with smaller diameters than the water supply connection of the water heater.

Before connecting the water supply pipe to the water heater, open the shutoff valve and clean out sand, debris, air, caulking material, etc. inside the pipe. Connect to the water inlet, then check water flow. Close the shutoff valve and clean the water filter.

Be sure to connect the water inlet and the hot water outlet as shown on the water heater. If reversed, the water heater will not function.

Installation of unions or flexible copper connections are recommended on the HOT and COLD water lines, so that the water heater may disconnect easily for servicing, if necessary.

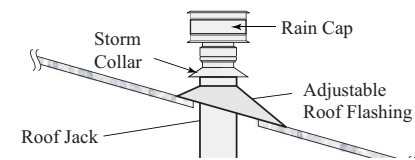
Install a Check Valve between the water heater and the water shutoff valve (see the top left diagram).

The following should be addressed in regards to the HOT WATER OUTLET:

- Connections between the water heater and point(s) of use should be as short and direct as possible.
- DO NOT use lead or plastic pipe.
- To conserve energy and minimize heat loss, insulation of hot water piping is recommended (see Hot and Cold Pipe Insulation Installation on page 24).

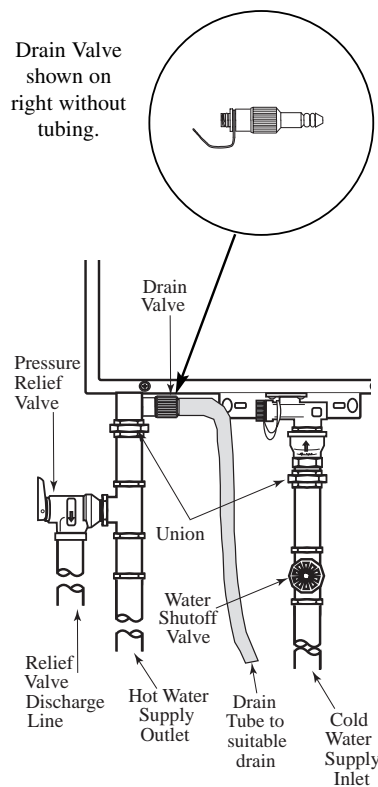
Notice: The flow rate of hot water may vary when more than two faucets (appliances, fixtures, etc.) are being used simultaneously.

Notice: The pipes MUST be completely drainable. If the hot water faucets are located at a point higher than the water heater, place a drain valve at the lowest point (see diagram at the left).



Alternate Vertical Vent Termination with Rain Cap

Relief Valve



Notice: The above illustrates a pressure-only relief valve. If local codes require a combination temperature and pressure relief valve be installed, an extension piece may be needed to ensure that the valve probe is not directly in the flow path of the water.

A new pressure relief valve, complying with the Standard for Relief Valves and Automatic Gas Shut-Off Devices for Hot Water Supply Systems, ANSI Z21.22/CSA 4.4, must be installed at the hot water outlet connection of the water heater at the time of installation. Local codes shall govern the installation of relief valves.

For safe operation of the water heater, be sure that:

- The pressure rating of the relief valve must not exceed 150 psi (1034 kPa), the maximum working pressure of the water heater as marked on the rating plate.
- The BTUH rating of the relief valve must equal or exceed the BTUH input of the water heater as marked on its rating plate.
- No valve of any type should be installed between the relief valve and the water heater
- Discharge from the relief valve should be piped to a suitable drain to eliminate potential water damage. Piping used should be of a type approved for the distribution of hot water.
- Hot and cold water lines should be insulated up to the water heater. Refer to page 23 for details.
- The discharge line must be NO SMALLER than the outlet of the relief valve and must pitch downward to allow complete drainage (by gravity) of the relief valve and discharge line.

- The end of the discharge line should not be threaded or concealed and should be protected from freezing. No valve of any type, restriction or reducer coupling should be installed in the discharge line.

Notice: Local codes govern the installation of relief valves. If local codes require that a temperature and pressure relief valve should be installed, the manufacturer recommends a type 40XL Watts T&P relief valve or an equivalent model be used.

Notice: Manual operation of relief valves should be performed at least once a year. Turn off the electrical power and gas shutoff valve. Lift and release lever on the relief valve and check the manual operation of the relief valve. You should take precaution to avoid contact with the hot water coming out of the relief valve and to prevent water damage.

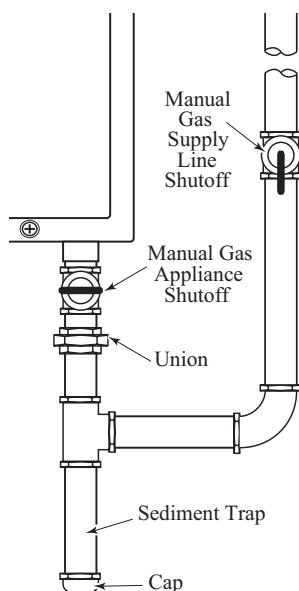
Notice: If the relief valve on the system discharges periodically, a problem exists and service to the water system is required.

The vinyl tubing as shown is supplied and connects to the drain valve located at the hot water outlet as shown in the diagram at left. Route the other end of the vinyl tubing to the drain pan or a suitable drain where leakage from the heater will not result in damage to the area adjacent to the heater or to lower floors of the structure.

Installing the Main Remote Control:

⚠ WARNING: Do not attempt to convert this water heater for use with a different type of gas other than the type shown on the rating plate. Such conversion could result in hazardous operating conditions.

Gas Supply



The supplied Manual Gas Appliance Shutoff Valve must be installed at the gas connection of the water heater at the time of installation (see diagram to the left).

The branch gas supply line to the water heater should be a minimum of 3/4" black steel pipe or other approved gas piping material.

A ground joint union or ANSI design certified semi-rigid or flexible gas appliance connector should be installed in the gas line close to the water heater. The National Fuel Gas Code (NFGC) ANSI Z223.1 and CAN B149 code mandates a manual gas shut-off valve: See NFGC & B149 for complete instructions.

If flexible connectors are used, the maximum length shall not exceed 36" (91 cm).

If lever type gas shut offs are used, they shall be T-Handle type.

Compound used on the threaded joints of the gas piping must be of the type resistant to the action of LP gas. Use compound sparingly on male threads only.

A sediment trap should be installed at the bottom of the gas line.

Do not use excessive force (over 31.5 ft lbs. [42.7 Nm]) in tightening the pipe, particularly if teflon pipe compound is used, as the unit may be damaged.

The inlet gas pressure to the water heater must not exceed 10.5" w.c. (2.6 kPa) for natural or 14" w.c. (3.5 kPa) for LP gas. For purposes of input adjustment, the minimum inlet gas pressure (with main burner on) is shown on the water heater rating plate. If high or low gas pressures are present, contact your gas supplier for correction.

NOTICE: To ensure proper operation of the heater the gas pipe and gas meter must be sized correctly.

Gas piping shall be in accordance with local, utility company requirement and/or in the absence of local codes, use the latest edition of the National Fuel Gas Code. In Canada, the latest edition of CSA B149.1 Natural Gas and Propane installation code.

⚠ WARNING: Never use an open flame to test for gas leaks, as property damage, personal injury, or death could result.

Leak Testing

The water heater and its gas connections must be leak tested at normal operating pressures before it is placed in operation.

- 1 Turn on the gas shut-off valve(s) to the water heater.

- 2 Use a soapy water solution to test for leaks at all connections and fittings. Bubbles indicate a gas leak that must be corrected.

The factory connections should also be leak tested after the water heater is placed in operation.

⚠ WARNING: Install a gas pressure regulator, in the gas supply line, which does not exceed the maximum supply pressure.

DO NOT use an industrial type gas regulator.

Pressure Testing the Gas Supply System

The water heater and its manual gas shut-off valve must be disconnected from the gas supply piping system during any pressure testing of the system at pressures in excess of 1/2 psi (14" w.c. [3.5 kPa]).

The water heater must be isolated from the gas piping system by closing the manual gas shut-off valve during any pressure testing of the gas supply piping at pressures equal to or less than 1/2 psi (14" w.c. [3.5 kPa]).

High Altitude

This water heater is certified for installations up to 3,280 feet (1000 m) above sea level. The input rating of this water heater is based on sea level operation. At higher elevations, the actual input rate may be lower than the value listed on the rating label.

NOTICE: Select High Altitude models are available. One model is available for use at elevations above 3,280 feet (1,000 m) up to 6,560 feet (2,000 m), and an additional model is available for use at elevations above 6,560 feet (2,000 m)

up to 9,840 feet (3,000 m).

NOTICE: For installations above 3,280 feet (1,000 m) elevation, the Altitude Chip on the PC board must be replaced. Do not install this water heater at elevations above 3,280 feet (1,000 m) without installing the proper Altitude Chip. Please contact your installer, local gas supplier, place of purchase or the Customer Service phone number as listed in this Use & Care Manual for more information.

▲ WARNING: Field wiring connections and electrical grounding must comply with local codes, or in the absence of local codes, with the latest edition of the National Electrical Code, ANSI/NFPA 70, or in Canada, Canadian Electrical Code, CSA C22.1 Part 1.

Remote Control Installation

NOTICE: The provided remote control will allow a maximum temperature setting of 120°F (49°C). Temperatures of up to 140°F (60°C) can be achieved with dip switch adjustment. Only qualified service personnel should perform this adjustment.

NOTICE: An optional cable (EZ Link Cable™) can be purchased separately to manifold two heaters together.

One (1) remote control is provided with the water heater. Additional remote controls may be purchased separately. Up to three (3) remote controls can be used with this water heater.

The following are considerations for determining the location of the remote control(s):

- **DO NOT** install any remote control outdoors or in areas where it can come in contact with water.
- Place remote control out of children's reach.
- The remote control can be installed in convenient locations such as the kitchen, laundry room, utility room, or directly beside the water heater.
- Avoid areas where the remote control may be exposed to heat, e.g. ranges or heaters.
- Avoid areas where the remote control

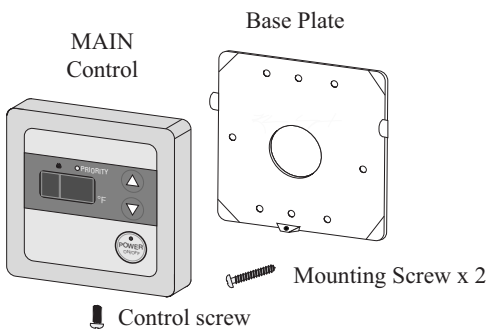
may be subjected to oil and/or steam from cooking.

- Avoid areas where chemical agents (such as thinner, benzine and alkalines) are used.
- Avoid areas of direct sunlight.
- The **MAXIMUM** distance between the water heater and the remote control installation location is limited to 195 feet (59 m) of wire.

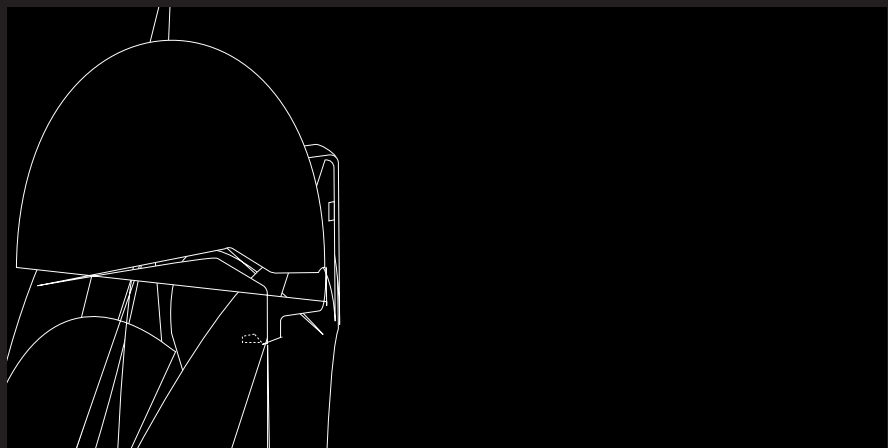
NOTICE: Only one of each type of remote controls can connect to the water heater. Therefore, a maximum of three controls can connect to the water heater.

No other manufacturer's controls are suitable for use with this water heater.

DO NOT attempt to disassemble the remote control.



Remote Control Model Number	Remote Control Description	Temperature Set Point Range	Availability
USC1-117	BATH 1	100°F–120°F (38°C)–(49°C)	Optional (Sold Separately)
USC2-117	BATH 2	100°F–120°F (38°C)–(49°C)	Optional (Sold Separately)
UMC-117	MAIN	100°F–120°F (38°C)–(49°C)	Factory Default
		125°F–140°F (52°C)–(60°C)	With Dip Switch Adjustment



⚠ WARNING: Field wiring connections and electrical grounding must comply with local codes, or in the absence of local codes, with the latest edition of the National Electrical Code, ANSI/NFPA 70, or in Canada, Canadian Electrical Code, CSA C22.1 Part 1.

⚠ WARNING: Shock hazard line voltage is present. Before servicing the water heater, turn off the electrical power to the water heater at the main disconnect or circuit breaker. Failure to do so could result in severe personal injury or death.

⚠ CAUTION: Label all wiring prior to disconnection when

errors can cause improper and dangerous operation. Verify correct operation after servicing.

Electrical

POWER CONNECTIONS

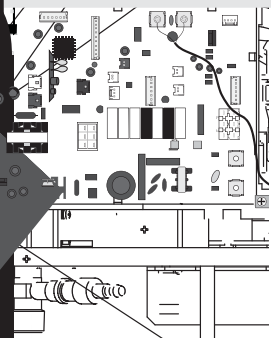
- The electrical supply for this water heater is 120 VAC/60 Hz, 15 Amps, 2 Amps.
- The water heater power supply must be connected with a ground wire.
- The installation circuit breaker is rated 15 Amps.
- Keep any existing wiring in place.
- If local codes require, follow local instructions.
- Connections

THE ELECTRICAL

Supply must be carried out by a qualified electrician in accordance with local codes. The water heater requires 120 VAC/60Hz and must be properly grounded. Connect grounding wire to water pipes, telephone cables, lightning rods and to grounding circuit conductors that carry a ground-fault current.

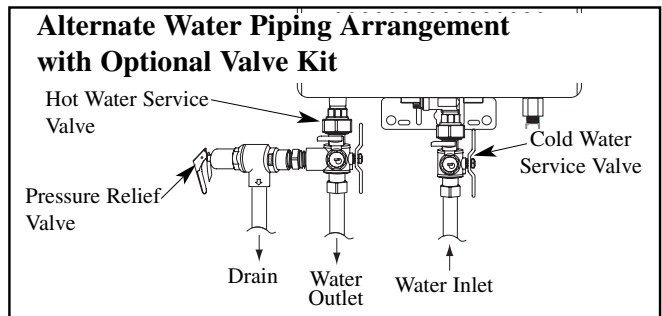
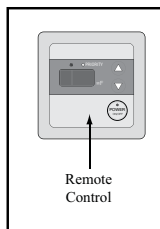
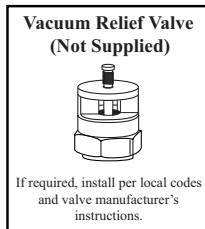
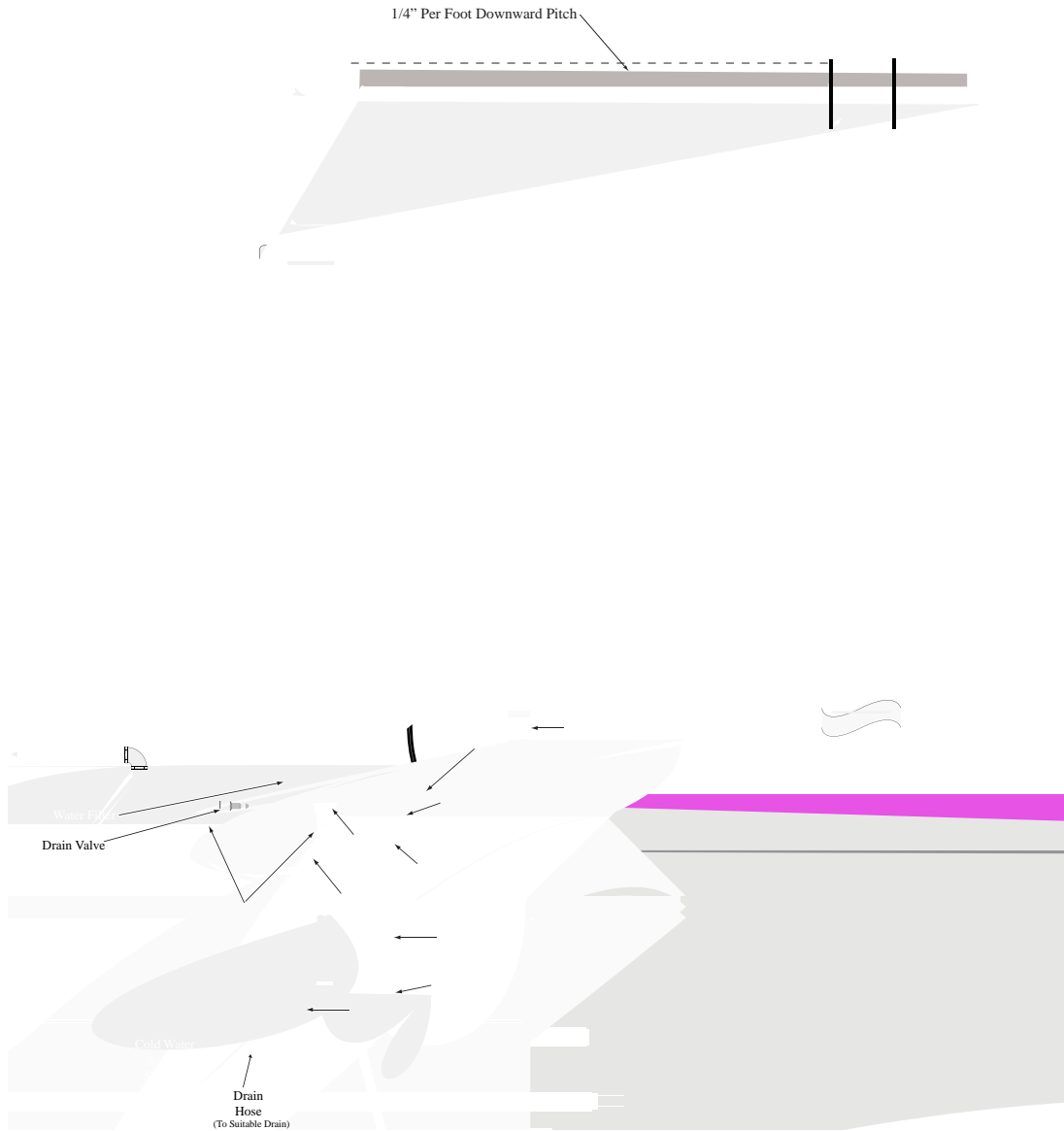
A ground-fault circuit interrupter (GFCI) switch must be provided and connected to the incoming 120VAC power. The water heater must be installed exactly as shown in the wiring diagram is also found on the inside cover panel.

The ground wire is provided in the enclosure and must be connected to the ground connection. The black wire to black leg wire and the white wire to the white neutral wire.



Installing the water heater:

Typical Installation of Water Heater (Venting Required)



NOTICE: The National Fuel Gas Code (NFGC) and B149 mandates a manual gas shut-off valve: See NFGC/B149 for complete instructions. Local codes or plumbing authority requirements may vary from the instructions or diagrams provided and take precedent over these instructions.

Insulation Blankets

▲ WARNING: If local codes require external application of insulation blanket kits the manufacturer's instructions included with the kit must be carefully followed.

Insulation blankets, available to the general public for external use on gas water heaters, are not necessary. The purpose of an insulation blanket is to reduce the standby heat loss encountered with storage tank heaters. This water heater does not store water making an insulation blanket unnecessary.

The manufacturer's warranty does not cover any damage or defect caused by installation, attachment or use of any type of energy saving or other unapproved devices (other than those authorized by the manufacturer) into, onto or in conjunction with the water heater. The use of unauthorized energy saving devices may shorten the life of the water heater and may endanger life and property.

The manufacturer disclaims any responsibility for such loss or injury resulting from the use of such unauthorized devices.

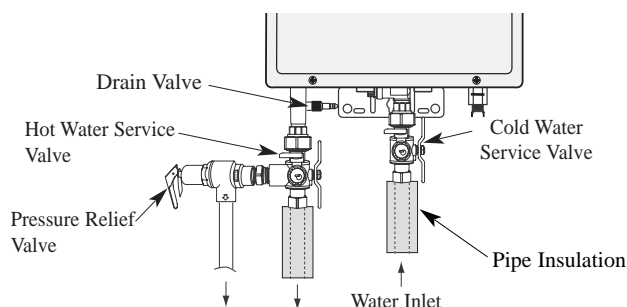
CAUTION: If local codes require the application of an external insulation blanket to this water heater, pay careful attention to the following so as not to restrict the proper function and operation of the water heater:

- Do not cover the air inlet, flue outlet or operating and warning labels attached to the water heater or attempt to relocate them on the exterior of insulation blanket.

Hot and Cold Pipe Insulation Installation

NOTICE: The hot and cold pipes should be insulated as shown to provide additional freeze protection.

▲ WARNING: In case the pipe insulation is not rated for the appropriate weather conditions install electric heat tracing or equivalent to prevent freezing of the pipes. Do not insulate or block drain valve on the hot outlet fitting. If the pipes are allowed to freeze, the water heater and the pipes may malfunction or leak due to freezing water.



For increased energy efficiency, use pipe insulation. Please install the insulation according to the diagram above, making sure

to insulate all the way to the top. **Do not** cover any drain or pressure relief valve(s).

During Installation of this water heater...

Do's

- Do follow all installation instructions covered in this manual.
- Do check inlet gas pressure to ensure that it is within the range specified on the rating plate.
- Do provide adequate air for combustion and ventilation as discussed in the Use & Care Manual and the National Fuel Gas Code (CAN/CGA B149 in Canada).
- Do maintain proper clearances to combustibles and non-combustibles as specified on the nameplate.
- Do ensure that the venting system complies with the guidelines found in the Use & Care Manual and National Fuel Gas Code (CAN/CGA B149 in Canada).

- Do contact local gas company to ensure gas meter and gas piping are adequately sized.
- Do use teflon tape on water line connections and fittings.

Don'ts

- Don't block or restrict Air Intake Opening located on the front cover of the water heater.
- Don't remove the front cover unless absolutely necessary. This should only be done after being examined by a qualified service technician.
- Don't install this product where standing water may occur.
- Don't use pipe dope on water line connections and fittings.

Installing the water heater:

Installation Check List

A. Indoor Water Heater Location

- Close to area of vent termination.
- Indoors and protected from freezing temperatures.
- Proper clearance from combustible surfaces observed.
- Sufficient fresh air supply for proper operation of water heater.
- Air supply free of corrosive elements and flammable vapors.
- Provisions made to protect area from water damage.
- Sufficient room to service heater.
- Combustible materials, such as clothing, cleaning materials, rags, etc. clear of the heater and vent piping.
- Water heater is properly attached to the wall.

B. Water Supply

- Water supply has sufficient pressure.
- Air purged from water heater and piping.
- Water connections tight and free of leaks.
- Water filter is clean and in place.
- Materials used are as instructed in this manual.
- Water pipes are insulated and protected from freezing.

C. Gas Supply

- Gas type matches rating plate.
- Gas supply pressure is sufficient for the water heater.
- Gas line equipped with shut-off valve, union and sediment trap.

- Approved pipe joint compound used.
- Soap and water solution used to check all connections and fittings for possible gas leak.
- Gas Company inspected installation (if required).

D. Relief Valve

- Pressure Relief Valve properly installed and discharge line run to open drain.
- Discharge line protected from freezing.

E. Co-Axial Venting

- Vent pipe material should be category III and meet UL1738 in US and ULC S636 in Canada.
- Connector(s) pitched (1/4" per foot of length minimum) DOWNWARD or UPWARD to termination. If UPWARD, a condensate trap must be installed close to the heater. See page 14.
- Connector(s) securely fastened together with high temperature silicone (500°F [260°C]) and air-tight.
- All co-axial vent runs are properly supported.
- Vent terminal is properly installed.
- Sufficient combustion air is available.
- Maximum and minimum vent lengths are observed.

F. Electrical Wiring

- Voltage matches rating plate.
- Water heater is properly grounded.
- Supply cord and/or wiring meets all local codes.

Lighting way

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Operating the water heater:

Safety Precautions

- A** Do turn off manual gas shut-off valve if water heater has been subjected to overheating, fire, flood, physical damage or if the gas supply fails to shut off.
- B** Do Not turn on water heater unless water and gas supplies are fully opened.
- C** Do Not turn on water heater if cold water supply shut-off valve is closed.
- D** Do Not allow combustible materials such as newspaper, rags or mops to accumulate near water heater.
- E** Do Not store or use gasoline or other flammable vapors and liquids, such as adhesives or paint thinner, in vicinity of this or any other appliance. If such flammables must be used, open doors and windows for ventilation, and all gas burning appliances in the vicinity should be shut off including their pilot lights, to avoid vapors lighting.
- F** If there is any difficulty in understanding or following the Operating Instructions or the Care and Cleaning section, it is recommended that a qualified person or serviceman perform the work.

NOTICE: Flammable vapors can be drawn by air currents from surrounding areas to the water heater.

Water Temperature Setting

▲ DANGER: There is a hot water scald potential if the temperature is set too high. Households with small children, disabled or elderly persons may require a 120°F (49°C) or lower temperature setting to prevent contact with HOT water.

The temperature of the water in the water heater can be regulated by setting the temperature on the front of the remote control.

Safety factors should be considered when selecting the water temperature setting of the water heater's remote control.

The remote control was set at 100°F (38°C) before the water heater was shipped from the factory. This is the recommended starting point.

Water temperatures above 125°F (52°C) can cause severe burns or death from scalding.

Be sure to read and follow the warnings outlined in this manual and on the label located on the water heater.

Mixing valves are available for reducing point of use water temperature by mixing hot and cold water in branch water lines. Contact a licensed plumber or the local plumbing authority for further information. (See page 4 for more details.)

The chart below may be used as a guide in determining the proper water temperature for your home.

Time/Temperature Relationship in Scalds

Water Temperature	Time To Produce a Serious Burn
120°F (49°C)	More than 5 minutes
125°F (52°C)	1½ to 2 minutes
130°F (54°C)	About 30 seconds
135°F (57°C)	About 10 seconds
140°F (60°C)	Less than 5 seconds
145°F (63°C)	Less than 3 seconds
150°F (66°C)	About 1½ seconds
155°F (68°C)	About 1 second

Table courtesy of Shriners Burn Institute

Water Temperature Setting...

Maximum water temperature occurs while the burner is on. To determine the water temperature, turn on a hot water faucet and place a thermometer in the water stream. Water temperature at the faucet may vary depending on season and length of pipe from the water heater.

The factory setting of the remote control temperature range is between 100°F (38°C) and 120°F (49°C).

The remote control is factory preset to 100°F (38°C).

To turn the remote control ON or OFF, press the POWER button.

To adjust the temperature to a required setting, press the UP arrow temperature button.

Pressing the UP or DOWN temperature adjustment buttons will change the temperature set point.

The temperature set point on the remote control cannot be increased above 112°F (44°C) when a hot water faucet is in the open position.

Notice: The remote control cannot be turned on when water is flowing or circulating through the water heater.

Notice: The factory setting allows operating temperatures between 100°F (38°C) and 120°F (49°C). Temperatures of up to 140°F (60°C) can be achieved with the MAIN (UMC-117) remote control and a dip switch adjustment. Only qualified service personnel should perform this adjustment. Only factory authorized remote control(s) should be used.

The hottest temperature water will be at the hot water faucet closest to the water heater.

Always remember to test the water temperature with your hand before use and remember that hotter water increases the risk of scald injury.

Always supervise young children or others who are incapacitated.

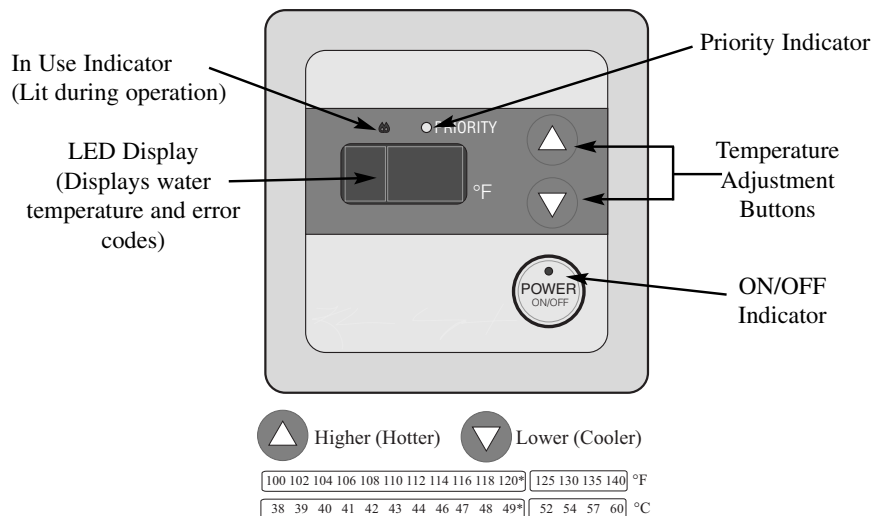
The water heater is equipped with a device that will shut off the gas supply to the burner if the water heater exceeds normal operating temperatures. Refer to the "Before You Call For Service" section located near the back of this manual, or contact your dealer.

▲ WARNING: Should overheating occur or the gas supply fail to shut off, turn off the manual gas control valve to the appliance.

If the water heater has been subjected to fire, flood, physical damage, or has been under water, turn off the manual gas shut-off valve(s), and do not operate the water heater again until it has been checked by qualified personnel.

Notice: The water heater may not operate with a small water flow. In such case, increase the water flow. If water heater still does not operate and hot water faucet is completely open, increase the temperature setting on the remote control.

Notice: Display shows °F only.



* Temperatures above 120°F (49°C) can be achieved by adjusting the dip switch. See page 35 for dip switch adjustment.

Care and cleaning of the water heater:

▲ DANGER: Before manually operating the relief valve, make certain no one will be exposed to the danger of the hot water released by the valve. The water may be hot enough to create a scald hazard. The water should be released into a suitable drain to prevent injury or property damage.

▲ DANGER: Hotter water increases the potential for Hot Water Scalds.

▲ DANGER: Failure to perform the recommended Routine Preventative Maintenance can harm the proper operation of this water heater, which can cause carbon monoxide dangers, excessive hot water temperatures and other potentially hazardous conditions.

▲ DANGER: Shock Hazard
Make sure the electrical power to the water heater is off to avoid potential serious injury or damage to components.

▲ DANGER: Combustible materials, such as clothing, cleaning materials or flammable liquids, etc., must not be placed against or next to the water heater.

Routine Preventative Maintenance

Properly maintained, your water heater will provide years of dependable trouble-free service.

It is recommended that a periodic inspection of the burner, relief valve, air intake filter, water filter and venting system should be made by service personnel qualified in gas appliance repair.

It is suggested that a routine preventive maintenance program be established and followed by the user.

At least once a year, lift and release the lever handle on the pressure relief valve, located in the hot outlet piping of the water heater, to make certain the valve operates freely. Allow several gallons to flush through the discharge line to an open drain.

NOTICE: If the pressure relief valve on the hot water heater discharges periodically, this may be due to a problem in the water system. Contact the water supplier or your plumbing contractor on how to correct this. **DO NOT plug the relief valve outlet.**

Rapid closing of faucets or solenoid valves in automatic water using appliances can cause a banging noise heard in a water pipe. Strategically located risers in the water pipe system or water hammer arresting devices can be used to minimize the problem.

Inspect the area around the water heater to ensure a safe operating environment. Keep appliance area clear and free from combustible materials, gasoline and other flammable vapors and liquids.

Ensure the unit has not been damaged. If damage or denting is present, contact a service personnel to verify proper operation.

Check for any abnormal sounds during normal operation of the water heater.

All piping should be checked for gas and/or water leaks. Refer to page 18 of this manual for instructions on leak testing.

The air intake and cold water supply filters should be cleaned monthly. Refer to the "Housekeeping" section for further information.

DO NOT operate the water heater if you feel something is wrong with the unit.

DO NOT allow children to operate or otherwise handle the unit.

Notice: After inspection, maintenance and/or cleaning, ensure proper operation by turning on a hot water faucet.

Housekeeping

Before performing Housekeeping tasks to this water heater, turn the unit off and disconnect the power supply.

Vacuum around the water heater for dust, dirt and lint on a regular basis.

Clean the water heater and remote control by using a damp soft cloth with a few drops of mild detergent and gently wiping the surfaces of the unit. Wipe any remaining moisture with a dry soft cloth.

To ensure sufficient ventilation and combustion air supply, proper clearances must be maintained.

DO NOT block or obstruct the air intake opening of the water heater. A minimum of 12" (30 cm) is required between this combustion air inlet opening and any obstruction.

The Air Intake and Water filters should be cleaned on a monthly basis.

HOW TO CLEAN THE WATER FILTER:

- Make sure the unit is OFF and the electrical power supply has been disconnected.
- Turn the water supply OFF to the heater.
- **Drain heater. See "Draining The Water Heater" section on page 30.**
- Unscrew the water filter, and slide the filter out.
- **DO NOT** tap the filter as it may deform and/or damage the filter.
- To remove severe sediment and dirt, use a soft brush and wash with running water.
- Return the filter to the water heater and screw in the filter.
- Turn the electrical power supply and cold water supply ON to the water heater.

Venting System Inspection

The venting system of a direct vent water heater should be inspected annually to ensure all of the vent sections are secure and air-tight.

It is recommended that qualified service personnel familiar with Category III venting inspect the venting system.

Check vent connection joint sections with a solution of soapy water to assure air-tightness while the unit is operating.

Bubbles around a joint connection indicates a seal leak. Refer to page 9 for vent sealing instructions.

DO NOT operate the unit if vent system shows signs of leaking exhaust.

Check to make sure that the air intake and vent outlet on the termination has not been blocked or contain debris.



Burner Inspection

Visually inspect the main burners annually.

Through the side sight glass, inspect the burner flame. Blue flames should be seen when the main burner is firing. See the figure on the left for location of sight glass.

If any unusual burner operation is noted, the water heater should be shut off until qualified service assistance can be obtained.

▲ CAUTION: For your safety, burner inspection and cleaning should be performed only by qualified service personnel.

For cleaning, a vacuum cleaner can be used on the burner.

If the water heater is to remain idle for an extended period of time, the power and water to the appliance should be turned off.

The water heater and piping should be drained if they might be subjected to freezing temperatures.

After a long shut-down period, the water heater's operation and controls should be checked by qualified service personnel.

Condensate Trap Inspection

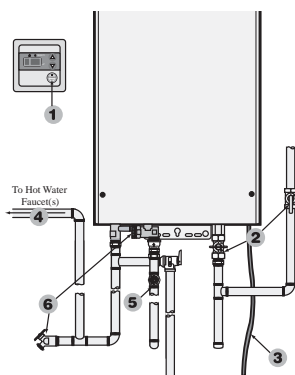
▲ CAUTION: Do not operate without the condensate trap connected to the vent and routed to the proper drain.

On a regular basis, inspect the condensate trap to ensure there is enough water in the trap and the condensate is draining properly.

Ensure that condensate is disposed of per local codes and regulations.

Care and cleaning of the water heater:

Draining the Water Heater



Draining the water heater

⚠ WARNING: Failure to follow these instructions while draining the water heater can cause serious damage to the water heater as well as personal injury, including scalding.

⚠ CAUTION:

Even when drained properly, a small amount of water will remain in the water heater. In cold weather, conditions this water can freeze. If this happens allow the defrost protection on the heater at least 30 minutes to melt the frozen water or the water heater may not work properly.

⚠ WARNING: Failure to drain the water heater can cause serious damage to the water heater as well as personal injury.

NOTICE: DO NOT unplug the electric power supply cord for freeze protection.

Below are instructions for draining water out of the water heater.

- 1 Turn off the switch on the remote control.
- 2 Close the gas shut-off valve(s).
- 3 Unplug the power supply cord (or disconnect breaker) at least 10 seconds after step #1.
- 4 Open all hot water faucets. Before proceeding to the next step, make sure that COLD water is coming out of all hot water faucets.
- 5 Close the water shut-off valve.
- 6 Using a suitable container to catch water, remove the water filter from heater. Attach a garden hose to the drain valve installed in the hot water outlet line and direct the

stream of water to a suitable drain where it will cause no damage. Leave water heater as is until next use.

To put the water heater back into operation after draining, follow the steps below.

- 1 Reinstall the drain plug and water filter. Close the hot water outlet drain valve.
- 2 Open the water shut-off valve and close again after making sure that water comes out from hot water faucets. (This step is to remove air from the water lines.)
- 3 Plug into an electrical outlet, fully open the gas shut-off valve and the water shut-off valve.

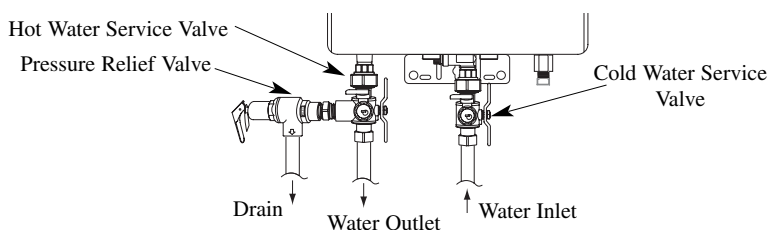
NOTICE: The water heater may not operate unless the above procedure is followed correctly.

Optional Maintenance Method

Isolator valve kits may be purchased as optional items from manufacturer, distributor or place of purchase. They allow for one person full

diagnostic testing and ease of flushing the system.

The kit includes two full port isolation valves, one for the cold side and one for the hot side.



Freeze Protection

Where the water heater may be exposed to freezing conditions, even for a short period of time, be sure to drain all water from the unit as instructed above.

Exposure to freezing conditions can occur from down draft of venting system or from installation in areas exposed to cold air.

The water heater is equipped with a Freeze Protection Electric Heater. As long as electricity is supplied to the water heater, it prevents freezing inside the water heater down to an ambient temperature of approximately -20°F (-28°C) (without wind conditions).

This device only protects the internal components of the water heater. It does NOT protect piping and valves. Therefore, piping and valves should be wrapped with insulation material as instructed on page 23.

Another method of freeze prevention is by running a small volume of water. Running water will protect the water heater, piping and valves.

Follow the steps below to ensure proper water flow through the water heater and piping:

- 1 Turn off the switch on the remote control.
- 2 Close the gas shut-off valve.
- 3 Open the hot water faucet slightly until a stream of approximately 1/8" (.32 cm) is flowing. Be sure to check the flow periodically.

Before You Call For Service...



Troubleshooting Tips

Save time and money! Review the charts on the following pages first and you may not need to call for service.

Problem	Possible Cause	What To Do
Not enough or no hot water.	Water Shutoff valve is not fully opened.	● Check shutoff valve and open fully.
	Hot water faucet is not fully opened.	● Open hot water faucet completely. (The main burner goes off when incoming water volume is inadequate.)
	Water piping is frozen.	● Allow piping to thaw.
	No electricity or water supply is cut off.	● Check that proper power is being supplied and/or water supply is adequate.
	Unit is not "ON".	● Turn the unit "ON" by the button on the remote control.
	The temperature may be set too low.	● Increase the temperature setting.
	Mixing Valve Malfunctions (if applicable)	● Check and replace if necessary.
	Error code displayed on remote control.	● See instructions for Error Code and if required, contact a dealer for service.
	Not enough water demand.	● Increase water flow.
	Water inlet filter clogged.	● Clean water inlet filter.
	Fixture aerator is clogged.	● Clean aerator.
	Scale buildup in heat exchanger.	● Check for error code. If required, contact a dealer for service.
	Hot and cold water lines reversed.	● Reverse water connections.
Water not hot enough.	The temperature may be set too low.	● Check and open the gas valve fully.
	The gas valve is not fully opened.	● Call your gas company to verify the gas meter and gas piping size.
	Gas supply pressure is low.	● Call dealer for service.
	Bleed over in one of the hot water fixtures.	● Decrease the temperature setting.
Water too hot.	Temperature is set too high.	● Check shutoff valve and open fully.
	Water shutoff valve is not fully opened.	● Allow more water to flow.
	Small amount of water has been heated.	● Normal operation. There is no need to call for service.
Fan continues to rotate after hot water faucet is closed.	This function is to supply hot water when the hot water faucet is reopened.	● Normal operation. There is no need to call for service.

⚠ CAUTION: Make certain power to water heater is "OFF" before removing protective cover FOR ANY REASON.

⚠ CAUTION: Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation. VERIFY PROPER OPERATION AFTER SERVICING.

⚠ CAUTION: For your safety, DO NOT attempt repair of electrical wiring, gas piping, remote control, burners, vent connectors or other safety devices. Refer repairs to qualified service personnel.

Error Code Guide:

When an error code is displayed:

- Close the hot water faucet, turn off the switch on the remote control.
- Wait for about 5 minutes before turning the switch on again.
- Open the hot water faucet.

If the error code remains in the display:

- Close the hot water faucet and turn off the switch on the remote control.
- Take the proper action shown below and attempt operation of the appliance again.

If the error code is still shown:

- Turn off the hot water faucet and turn off the switch on the remote control.
- Take note of the error code displayed and call the customer service assistance number in the “If You Need Service” section of the manual on the back cover.

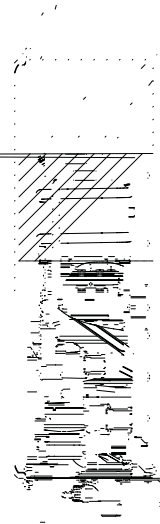
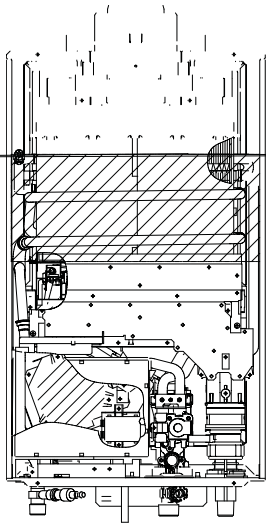
Notice: If an error code other than those listed below is displayed, immediately turn off the hot water faucet, take note of the error code, turn off the switch on the remote control and call the customer assistance number.

Error Code	Possible Cause	What To Do
11	The Gas Shutoff Valve is not opened completely.	<ul style="list-style-type: none"> ● Open the Gas Shutoff Valve completely.
12	Gas Service has been interrupted. LP Gas is running low. (LP models only)	<ul style="list-style-type: none"> ● Contact Gas Utility Company. ● Fill up LP Gas container or replace with a new cylinder of LP Gas.
15	The hot water faucet is not opened enough.	<ul style="list-style-type: none"> ● Open the faucet more to secure enough volume.
05 (Every 60 seconds you hear an alarm or when the faucet is closed, the alarm stops.)	Air intake or vent termination may be blocked. The vent pipes on the concentric vent termination may not be connected properly.	<ul style="list-style-type: none"> ● Remove any obstructions on the air intake or vent termination. ● Contact a dealer for service.
13	If the error code is still displayed after taking the above steps.	<ul style="list-style-type: none"> ● Contact a dealer for service.
1L	Water heater has build up of lime deposits.	<ul style="list-style-type: none"> ● Contact a dealer for service.

▲ CAUTION: Make certain power to water heater is “OFF” before removing protective cover FOR ANY REASON.

▲ CAUTION: Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation. VERIFY PROPER OPERATION AFTER SERVICING.

▲ CAUTION: For your safety, DO NOT attempt repair of gas piping, remote control, burners, vent connectors or other safety devices. Refer repairs to qualified service personnel.



⚠ WARNING: Improper adjustment, service or maintenance can result in property damage, personal injury, or death.

operation,
property damage,

40°F (60°C) water

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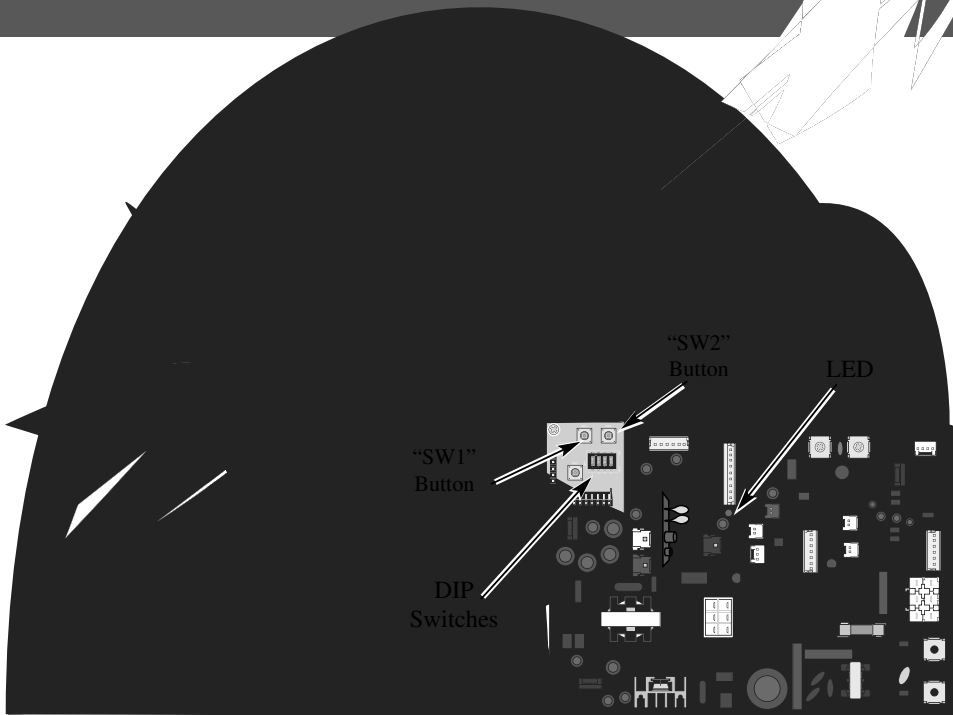
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P Switch location

the "ON" position. **DO NOT** alter
PCB: Gas

ously.



Notes:

IF YOU NEED SERVICE



1. Should you have any questions about your new water heater, or if it requires adjustment, repair, or routine maintenance, it is suggested that you first contact your installer, plumbing contractor or previously agreed upon service agency. In the event the firm has moved, or is unavailable, refer to the telephone directory, commercial listings or local utility for qualified service assistance.
2. Should your problem not be solved to your complete satisfaction, you should then contact the Manufacturer's National Service Department at the following address:
2600 Gunter Park Drive
Montgomery, Alabama 36109-1413
Phone: 1-800-432-8373.

When contacting the manufacturer, the following information will be requested:

- a. Model and serial number of the water heater as shown on the rating plate attached to the front panel of the heater.
- b. Address where the water heater is located and physical location.
- c. Name and address of installer and any service agency who performed service on the water heater.
- d. Date of original installation and dates any service work was performed.
- e. Details of the problem as you can best describe them.
- f. List of people, with dates, who have been contacted regarding your problem.

Important Instructions for the Commonwealth of Massachusetts

The Commonwealth of Massachusetts requires compliance with regulation 248 CMR 4.00 and 5.00 for installation of through – the – wall vented gas appliances as follows:

(a) For direct-vent appliances, mechanical-vent heating appliances or domestic hot water equipment, where the bottom of the vent terminal and the air intake is installed below four feet above grade the following requirements must be satisfied:

1. If there is not one already present, on each floor level where there are bedroom(s), a carbon monoxide detector and alarm shall be placed in the living area outside the bedroom(s). The carbon monoxide detector shall comply with NFPA 720 (2005 Edition).
2. A carbon monoxide detector shall be located in the room that houses the appliance or equipment and shall:
 - a. Be powered by the same electrical circuit as the appliance or equipment such that only one service switch services both the appliance and the carbon monoxide detector;
 - b. Have battery back-up power;
 - c. Meet ANSI/UL 2034 Standards and comply with NFPA 720 (2005 Edition);and
 - d. Have been approved and listed by a Nationally Recognized Testing Laboratory as recognized under 527 CMR.
3. A Product-approved vent terminal must be used, and if applicable, a Product-approved air intake must be used. Installation shall be in strict compliance with the manufacturer's instructions. A copy of the installation

instructions shall remain with the appliance or equipment at the completion of the installation.

4. A metal or plastic identification plate shall be mounted at the exterior of the building, four feet directly above the location of vent terminal. The plate shall be of sufficient size to be easily read from a distance of eight feet away, and read "Gas Vent Directly Below".

(b) For direct-vent appliances, mechanical-vent heating appliances or domestic hot water equipment where the bottom of the vent terminal and the air intake is installed above four feet above grade the following requirements must be satisfied:

1. If there is not one already present, on each floor level where there are bedroom(s), a carbon monoxide detector and alarm shall be placed in the living area outside the bedroom(s). The carbon monoxide detector shall comply with NFPA 720 (2005 Edition).
2. A carbon monoxide detector shall:
 - a. Be located in the room that houses the appliance or equipment;
 - b. Be either hard-wired or battery powered or both; and
 - c. Shall comply with NFPA 720 (2005 Edition).
3. A Product-approved vent terminal must be used, and if applicable, a Product-approved air intake must be used. Installation shall be in strict compliance with the manufacturer's instructions. A copy of the installation instructions shall remain with the appliance or equipment at the completion of the installation.